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AMERICAN TELEPHONE AND TELEGRAPH COMPANY

195 BROADWAY, NEW YORK, N.Y. 10007

DRAWING NOTICE

SD-32021-01		**ISSUE**	19D
CD	3D	**APP.**	8D
RATING	AT&TCo Std.		
SYSTEM	Step-By-Step		
DATE	March 9, 1966		

TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And - Switchmans Talking Line Circuit

DESCRIPTION

6.1 This circuit is reissued to provide for connection to the Large MJ Mobile Radio Telephone System - Stile Circuit and to the Manual Outgoing Trunk Test Frame. In conjunction with this, the connecting information for Fig. 1 and Fig. 16 is revised to cover all circuits requiring connection to this circuit.

6.2 The 52A, option B, Head Telephone Set is rated Mfr. Disc. and superseded by the 52S, option A, Head Telephone Set.

6.3 The Current Drain Data for this circuit is not affected by changes in this issue.

6.4 D change. Does not require WECo notification to Tel. Co.

6.5 Equipment information is not affected.

6.6 Equipment Design Requirements are not affected.

No engineering letter will be issued.

STEP-BY-STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

B. Changes in Apparatus

B.1 SUPERSEDED	SUPERSEDED BY
52A Head Telephone Set B Option	52S Head Telephone Set A Option

D. Description of Changes

D.1 Connecting information for the T&R leads in Fig. 1 is changed to provide information for locations, other than switch frames and relay rack equipment, requiring 2-wire talking jacks.

D.2 Connecting information for the T, T1, R, and R1 leads in Fig. 16 is changed to provide universal coverage of all locations requiring 4-wire talking jacks.

D.3 The 52A head telephone set, Fig. 18, is designated option B and rated Mfr Disc., superseded by the 52S head telephone set, option A.

D.4 Reference to automatic ticketing is remove from Note 102.

D.5 Connecting information in Fig. 59 is changed to agree with changes made in Fig. 1 and 16.

D.6 Note 110 was added in this reissue.

F. Changes in CD Sections

F.1 Under 4. CONNECTING CIRCUITS add:

4.16 Large MJ Mobile Radio Telephone System - Stile Circuit - SD-2R017-01*.

4.17 Manual OGT Test Frame - SD-32349-01.

F.2 Under 4. CONNECTING CIRCUITS delete:

4.07 Message Ticketer Trunk Test Circuit - SD-31944-01.

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DEPT 2341-WCB-RJJ

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DRAWING NOTICE

SD-32021-01 **ISSUE** 18D
CD 3D **APP.** 7D
RATING AT&TCo. Std.
SYSTEM Step-By-Step
DATE January 9, 1964

TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And - Switchman's Talking Line Circuit

DESCRIPTION

6.1 A connection is added to the talking line circuit to connect to the Miscellaneous Circuit for Automatic Number Forwarding Frames.

6.2 This is one of a number of connecting circuits being changed in connection with the introduction of automatic number forwarding equipment in No. 1 offices with AMA.

6.3 The Current Drain Data for this circuit is not affected by changes on this issue.

6.4 D change. Does not require WECo notification to Tel Co.

6.5 Equipment information is not affected.

6.6 Equipment Design Requirements are not affected.

An engineering letter will be issued.

STEP-BY-STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

D. Description of Changes

D.1 In Fig. 1 connection is shown to Miscellaneous Circuit for Automatic Number Forwarding Frames.

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DEPT 2363-FNS-RJJ

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SD-32021-011-013 ISSUE 17D
CD 3D APP. 6D
RATING AT&TCo Std.
SYSTEM Step-By-Step
DATE March 10, 1960

DRAWING NOTICE

JUL 25 1960
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TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And - Switchman's Talking Line Circuit

DESCRIPTION

6.1 This circuit is reissued to provide a talking line circuit for exclusive use in conjunction with ANI in offices with ANI equipment.

6.11 To provide for the above, additional connecting information is shown in the cross connection figures, and the optional jack designation (ANI SWMN) in added in Fig. 17.

6.2 Current Drains are not affected.

6.3 Equipment information will be covered by drawing ED-90048-( ).

6.4 Equipment Design Requirements are not affected.

No engineering letter will be issued.

STEP BY STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Fig. 17, optional designation (ANI SWMN) is added.

D.2 Connection to Fig. 61 is added in Fig. 57.

D.3 Fig. 61 and Note 205 are added.

D.4 Connection to TALK STATION JKS (SWMN) at IDF is removed from T and R leads in lower part of Fig. 59 and added to T, R, T1 and R1 leads in upper part of Fig. 59 to conform with manufacturing drawing.

D.5 Circuit Note 102 is changed to show one Fig. 16 per building required for use with ANI equipment and one per building required for use with other equipment.

All other headings, no change.

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DEPT. 2335-MKD-FBB-SJ

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SD-32021-011-013 ISSUE 16D
CD 3D APP. 5D

DRAWING NOTICE

RATING AT&TCo Std.
SYSTEM Step-By-Step
DATE October 22, 1959

TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And - Switchman's Talking Line Circuit

DESCRIPTION

6.1 In Fig. 1, connection to miscellaneous ckt. for Step-By-Step Intertoll with CAMA is added.

6.2 Current Drains are not affected.

6.3 Equipment information is not affected.

6.4 Equipment Design Requirements are not affected.

No engineering letter will be issued.

CIRCUIT DESCRIPTION

CD-32021-01
Issue 3-D
App. 5-D
Dwg. Issue 16-D

STEP BY STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Fig. 1, connection to SXS Intertoll with CAMA is added.

4. CONNECTING CIRCUITS

When this circuit is listed on a keysheet the connecting information thereon is to be followed.

4.01 Test Line to 12C Test Desk - SD-31400-01.

4.02 Test Distributor Control Circuit - SD-31401-01.

4.03 Permanent Signal Test Circuit - SD-31402-01.

4.04 Test Line Circuit for One Way Transmission Testing - SD-96000-01.

4.05 Key and Lamp Circuit in No. 14 Local Test Desk - SD-90050-01.

4.06 Connector Test Line - SD-31653-01.

4.07 Message Ticketer Trunk Test Circuit - SD-31944-01.

4.08 Local Subscriber Line Circuit in Dial Office - SD-31531-01.

4.09 (For Fig. 14 - A&M Only.)

4.091 Switchman's Talking Line - SD-31619-01.

4.092 Switchman's Talking Line - SD-31231-01.

4.093 Switchman's Talking Line - ES-30428-01.

4.10 Miscellaneous Circuit - SD-32153-01.

4.11 Traffic Register Cabinet Circuit - SD-95531-01.

4.12 Automatic Trunk Test Circuit - SD-32006-01.

4.13 Announcement System No. 6A Control Circuit - SD-95608-011.

4.14 Traffic Usage Recorder Circuit - SD-95738-01.

4.15 Miscellaneous Circuit for Step by Step Intertoll with CAMA - SD-32272-01.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-JML-FBB-SS

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195 BROADWAY, NEW YORK 7

SD-32021-011-013 ISSUE 15-D
CD 3-D APP. 4-D
RATING AT&TCo Std.
SYSTEM Step-By-Step - Ckt.
DATE August 22, 1957

DRAWING NOTICE

TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And - Switchman's Talking Line Circuit

DESCRIPTION

6.1 This circuit is reissued to provide a change in apparatus in conjunction with the use of solderless wrap connections and modernization of step equipment. The 506A jack is rated "Standard" and supersedes the 467 Jack and 366 jack rated "A&M" in this issue.

6.2 Current Drains are not affected.

6.3 Equipment information is affected.

6.4 Equipment Design Requirements are not affected.

No engineering letter will be issued.

OCT 15 1957

STEP BY STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1

Superseded	Superseded By
467A jack ("W" Option)	506A jack ("E" Option)
366 jack ("Q" Option)	

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The use of options "W" and "Q" are rated A&M and superseded by option "E".

D.2 Option "E" is added to the Options Used Table and Note 108.

D.3 Connecting Information for the 6A Announcement System and Traffic Usage Recorder Circuit was added to Fig. 16.

4. CONNECTING CIRCUITS

When this circuit is listed on a keysheet the Connecting Information thereon is to be followed.

4.01 Test Line to 12C Test Desk SD-31400-01.

4.02 Test Distributor Control Circuit SD-31401-01.

4.03 Permanent Signal Test Circuit SD-31402-01.

4.04 Test Line Circuit for One Way Transmission Testing SD-96000-01.

4.05 Key and Lamp Circuit in No. 14 Local Test Desk SD-90050-01.

4.06 Connector Test Line SD-31653-01.

4.07 Message Ticketer Trunk Test Circuit SD-31944-01.

4.08 Local Subscriber Line Circuit in Dial Office SD-31531-01.

4.09 (For Fig. 14 - A&M Only.)

4.091 Switchman's Talking Line SD-31619-01.

4.092 Switchman's Talking Line SD-31231-01.

4.093 Switchman's Talking Line ES-30428-01.

4.10 Miscellaneous Circuit SD-32153-01.

4.11 Traffic Register Cabinet Circuit SD-95531-01.

4.12 Automatic Trunk Test Circuit SD-32206-01.

4.13 Announcement System No. 6A Control Circuit SD-95608-011.

4.14 Traffic Usage Recorder Circuit SD-95738-01.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-WCB-RCD-TM

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195 BROADWAY, NEW YORK 7

SD-32021-011-013 ISSUE 14-D
CD 3-D APP. 3-D
RATING AT&TCo Std.
SYSTEM Step-By-Step - Ckt.
DATE Aug. 16, 1955

DRAWING NOTICE

TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And - Switchman's Talking Line Circuit

DESCRIPTION REASONS FOR ISSUE AND SUPPLEMENTARY INFORMATION

6.1 This circuit is reissued to add a 502A jack for use on the new line finder frames per J32007.

6.2 Current Drains are not affected.

6.3 Equipment information is covered on ED-31240-01, Iss. 1.

6.4 Equipment Design Requirements are not affected.

6.5 An engineering letter will be issued.

CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

CD-32021-01
Issue 3-D
Appendix 3-D
Dwg. Issue 14-D

STEP-BY-STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

ORIGINAL BY THE HAWTHORNE PRINT SHOP

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

502A Jack - Fig. 2
"F" option

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 A 502A jack is added to Fig. 2 for use on the new line finder frames per J-32007.

D.2 Note 102 is modified to show the use of option "F" at the "talking station for use with hand tst. set per Fig. 9 or equivalent".

D.3 Option "F" is added to Note 108 and the Options Used table.

D.4 Equipment information ED-31240-01 is added.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2325-JPD-EWO-PS

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AMERICAN TELEPHONE AND TELEGRAPH COMPANY
195 BROADWAY, NEW YORK 7

SD-32021-011-013 ISSUE 13-D
CD. 3-D APP. 2-D
RATING AT&T Co. Standard
SYSTEM Step-By-Step - Ckt.
DATE July 2, 1954

DRAWING NOTICE

TITLE

Step-By-Step Systems - No. 1 - Transmission Test Line Circuit - And Permanent Signal Release - Circuit For Connectors And Switchmans Talking Line Circuit

DESCRIPTION

1.1 The use of the circuit is extended to offices arranged for AMA. This requires the addition of connecting information to the automatic trunk test circuit (SD-32206-01

1.2 The use of the 178D induction coil is rated "Mfr. Disc." and superseded by the universal 181B induction coil.

1.3 The use of the 307N retardation coil is rated "Mfr. Disc." and superseded by the 274L retardation coil which is a universal battery feed coil for the transmitter of the head telephone set.

Current drain is not affected.

Equipment Information is not affected.

Engineering Requirements are not affected.

No engineering letter will be issued.

CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

CD-32021-01
Issue 3-D
Appendix 2-D
Dwg. Issue 13-D

STEP BY STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded By
	178D Ind. Coil Fig. A	181B Ind. Coil Fig. B.
	307N Retard Coil Opt. H - Fig. 16	274L Retard Coil Opt. G - Fig. 16

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The use of the 178D induction coil, Fig. A, is rated Mfr. Disc. and superseded by the universal 181B induction coil (Fig. B). Fig. A was formerly a part of Fig. 16 and Fig. B was not shown.

D.2 The use of the 307N retard coil is rated Mfr. Disc. and superseded by the 274L retard coil which is a universal battery feed coil for the transmitter of the head telephone set.

D.3 Options "G" and "H" and Figs. A and B are added to the options used table and Note 108.

D.4 Reference to "AMA" is added to Note 102.

D.5 Connecting information to "automatic trunk test ckt." is added to Figs. 1, 51 and 59.

D.6 In Note 102, "Q or W" was formerly "Q".

D.7 In Fig. 59, connection to "Message Ticketer Trk. Test Ckt." is rated A&M Only.

All other headings no change.

4. CONNECTING CIRCUITS

When this circuit is listed on a key sheet the Connecting Information thereon is to be followed.

4.01 Test Line to 12C Test Desk SD-31400-01.

4.02 Test Distributor Control Circuit SD-31401-01.

4.03 Permanent Signal Test Circuit SD-31402-01.

4.04 Test Line Circuit for One Way Transmission Testing SD-96000-01.

4.05 Key and Lamp Circuit in No. 14 Local Test Desk SD-90050-01.

4.06 Connector Test Line SD-31653-01.

4.07 Message Ticketer Trunk Test Circuit SD-31944-01.

4.08 Local Subscriber Line Circuit in Dial Office SD-31531-01.

4.09 (For Fig. 14 - A&M Only).

4.091 Switchman's Talking Line SD-31619-01.

4.092 Switchman's Talking Line SD-31231-01.

4.093 Switchman's Talking Line ES-30428-01.

4.10 Miscellaneous Circuit SD-32153-01.

4.11 Traffic Register Cabinet Circuit SD-95531-01.

4.12 Automatic Trunk Test Circuit SD-32206-01.

CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

CD-32021-01
Issue 3-D
Appendix 1-D
Dwg. Issue 12-D

SEP 27 1951

STEP-BY-STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Prior to dwg. iss. 12-D the following info. was part of Note 102 for - TALKING STATION FOR USE WITH HAND TST. SET PER FIG. 9 OR EQUIVALENT-: "At R.R. Bays with coin trks. M.R. Trks. R.O.T. SWS., Interoffice Repeaters or PBX Tie Lines."

D.2 The following phrase is added to Note 204: "These provisions are also applicable to Fig. 61."

D.3 Leads "to message ticketer trk. test ckt." are added in Fig. 59, and "to misc. ckt. for R.R. bays" in Fig. 60. "16AM as req." and reference to Notes 103 and 104 are added in Fig. 61.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-BP-RLL-GJ

CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

CD-32021-01
Issue 3-D
Dwg. Issue 11-D

STEP BY STEP SYSTEMS
NO. 1
TRANSMISSION TEST LINE CIRCUIT AND PERMANENT SIGNAL RELEASE CIRCUIT FOR CONNECTORS AND SWITCHMAN'S TALKING LINE CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1

Superseded	Superseded By
101A Ind. Coil)	178D Ind. Coil)
2MF Condenser) Fig. 6	33L Varistor)
33L Varistor)	2MF Condenser) Fig. 16
684BA Sub. Set Fig. 15	3MF Condenser)
	307N Retard Coil)
479EE Key - K Opt.	2AP Key Unit - J Option
2 - 215 Jacks - Fig. 7	2 - 223 Jacks Fig. 17

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Figs. 6 and 15 are rated "Mfr. Disc." and are replaced by Fig. 16 to provide talking equipment for use with a head telephone set, and associated jacks without local contacts, and which may be located at a considerable distance from the induction coil.

D.2 Fig. 7 is rated "Mfr. Disc." replaced by Fig. 17, to provide jacks for use with Fig. 16.

D.3 Option "Y" was rated "Mfr. Disc." Reference to option "X" and "Y" removed from note 102.

D.4 Fig. 18 was formerly part of Figs. 7 and 14.

D.5 Notes 101, 102 and 108 and the options used table are revised to record the above changes.

D.6 In Fig. 3 the 479EE key is replaced by to 2AP key unit to provide an improved equipment arrangement.

D.7 Figs. 51, 53 & 55 and note 201 are rated "A&M Only" and Figs. 57, 58, 59, 60 & 61 were added.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit provides for (a) intercommunication between maintenance men in the switch room, (b) for clearing permanent signals due to the calling party holding the connector and (c) for one-way transmission tests of connectors.

2. WORKING LIMITS

2.1 Maximum conductor loop resistance from the most remote jack at the connector frame to perm. signal test circuit, 4 ohms.

3. FUNCTIONS

3.1 To provide a talking circuit for use between switch frames, message register racks and traffic register racks.

3.2 To provide for clearing permanent signals due to the calling party holding the connector.

3.3 To provide for one-way transmission tests of connectors in conjunction with transmission testing circuit.

3.4 To provide a talking circuit from AB toll transmission selector, toll transmission selector and coin control selector frames by use of a subscriber line circuit in the dial office.

4. CONNECTING CIRCUITS

When this circuit is listed on a key sheet, the Connecting Information thereon is to be followed.

4.01 Test Line to 12C Test Desk SD-31400-01.

4.02 Test Distributor Control Circuit SD-31401-01.

4.03 Permanent Signal Test Circuit SD-31402-01.

4.04 Test Line Circuit for One Way Transmission Testing SD-96000-01.

4.05 Key and Lamp Circuit in No. 14 Local Test Desk SD-90050-01.

4.06 Connector Test Line SD-31653-01.

4.07 Message Ticketer Trunk Test Circuit SD-31944-01.

4.08 Local Subscriber Line Circuit in Dial Office. SD-31531-01.

4.09 (For Fig. 14 - A&M Only).

4.091 Switchman's Talking Line SD-31619-01.

4.092 Switchman's Talking Line SD-31231-01.

4.093 Switchman's Talking Line ES-30428-01.

4.10 Miscellaneous Circuit SD-32153-01.

4.11 Traffic Register Cabinet Circuit SD-95531-01.

DESCRIPTION OF OPERATION

5. TALKING LINE

5.1 The talking line is used by prearrangement when two testers at different locations cooperate on a test. No signaling features are provided. Fig. 1 supplies talking battery to all talking stations and provides for connection to the No. 14 local test desk when required. Fig. 2 provides talking station jacks at switch frames, and, when permanent signal release and transmission testing is not required, at connector frames. Fig. 16 provides an induction coil and battery supply circuit to operate with the talking station jacks per Fig. 17 located at traffic or message register racks or the IDF or with similar jacks at the traffic register cabinet. A hand test set per Fig. 9 is used with the talking jacks of Fig. 2 and Fig. 5 and an operators set is used with the talking jacks of Fig. 17. A varistor is provided in Fig. 16 to reduce the intensity of acoustic shocks. When Fig. 6, 11, or 15 is used, battery is supplied to the operators telephone set from retard coil (A) of Fig. 1 thru the induction coil of these figures, and the induction coil circuit is closed by local contacts of the jacks per Fig. 7.

6. TRANSMISSION TESTING

6.1 The key in Fig. 3 is operated to its (TRANS) position when transmission tests are to be made on connectors in a hundred group other than that in which the transmission test line is terminated. By means of a patching cord described in the BSP on one way transmission tests, the jack of Fig. 5 is patched to jacks 3 and 4 in the connector frame on which the "99" test line of each connector group is terminated. This connects 1 milliwatt testing power to the "99" terminal and transmission tests may then be made by dialing this terminal from the transmission test circuit.

7. RELEASE OF CONNECTORS HELD BY THE CALLING PARTY

7.1 When connectors are held by the calling party if the subscriber loop is not too low in resistance the connectors may be released by operating the key of Fig. 3 to the (PS RLS) position and then patching the jack of Fig. 5 or 12 to the test jack of the connector using the low resistance cord of Fig. 8. This will result in connecting the permanent signal release circuit to the connector. This latter circuit will test the subscriber line for polarity and low resistance, and if conditions are favorable will apply battery and ground to shunt down the (A) relay of the connector releasing the same.

7.2 The detailed circuit operation is as follows. As the connector will test busy there will be ground on the sleeve which will be connected to the sleeve of the jack in Fig. 5 or 12 operating relay (ST). If the permanent signal test circuit is not busy ground will be standing on lead "G" which on the operation of relay (ST) will cause relay (SO) to operate and lock to the sleeve of the connector through the back contact of relay (EC). The operation of relay (SO) will cause the release of relay (ST). Ground from lead "G" will then, if no other (CH) relays in the test distributor control circuit, or the test line circuit to the test distributor are operated, cause the operation of relay (CH) which will lock up to relay (EC). The operation of relay (CH) will operate relay (PS) disconnecting the jack of Fig. 5 from Fig. 3 and connecting it to the permanent signal test circuit, and also connecting grounds to leads "ST" and "BC". This will cause the permanent signal test circuit to begin functioning, first removing ground from lead "G" then testing the subscriber line for polarity and resistance, and if the resistance is sufficient to insure against blowing fuses (approximately 50 ohms) to apply battery and ground which will shunt down the (A) relay of the connector. This will remove ground from the sleeve releasing relay (SO). The release of relay (SO) will remove ground from lead "BC" giving an indication to the permanent signal test circuit that the connector has been released. The latter circuit will then connect ground to lead "EC", operating relay (EC) and restoring the circuit to normal. If the connector is not released due to the fact that the test circuit found the resistance of the loop too low to apply the shunting battery and ground then the test circuit will complete its cycle connecting ground to lead "EC". This will operate relay (EC) which will lock to the sleeve of the connector and will release relay (CH) and in turn (PS). The object of slow release relay (ST) and slow operate characteristics of relays (SO), (CH) and (PS) is to guard against plug fumbling when patching the jack of Fig. 5 to the test jack of the connector. In order that proper tests of the subscriber line may be made it is necessary that the tip and ring leads of the patching circuit be completed by the time relay (PS) operates.

7.3 As the test man is observing the action of the connector no signal is necessary to indicate whether or not the connector releases. If the connector does not release after an interval of approximately 10 seconds following the completion of the patch it is an indication either that the subscribers loop is too low in resistance, that the permanent signal test circuit is busy or that there is trouble in the circuit.

8. USE OF JACKS PER FIGS. 12 AND 14

When a switchmans talking line is available in an office, but does not provide for transmission testing or permanent signal release, Figs. 3, 4, and 12 of this circuit may be used to provide these features.

Where one of the switchman's talking lines now rated "Mfr. Disc." is in use, and talking station jacks for an added traffic register each are required, they are provided per Fig. 14 of this drawing.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-OCH-RLL-MG